

The Global Warming Pollution Reduction Act of 2006 Technically Feasible and Scientifically Justified

This bill puts the United States on a path to reduce substantially its greenhouse gas emissions over the next fifty years. It would place the U.S. Environmental Protection Agency (EPA) in charge of national programs to help stabilize global atmospheric concentrations of greenhouse gases.

Sets Stabilization of Atmospheric CO₂ Concentrations as a National Goal. The bill sets a national goal of a reducing U.S. greenhouse gas emissions to contribute to a stabilization of global concentrations of carbon dioxide (CO₂) and its equivalents in the atmosphere below 450 parts per million (or ppm) by the year 2050. The current CO₂ concentration in the global atmosphere is 378 ppm, and preindustrial concentration was 280 ppmⁱ.

Draws Upon Existing Programs Currently Being Implemented in the U.S.. To achieve the bill's goal, the United States must reduce its emissions of CO₂ to the levels the country emitted in 1990 by 2020 and further reduce emissions between 2020 and 2050ⁱⁱ. The bill draws upon policies already being implemented in several U.S. states to meet this objective:

Goal Setting. In 2004, implemented by Executive Order in 2005, our largest state, California established limits on emissions of carbon and other pollutants linked to global climate change. Under the program, California's total carbon output is limited to 1990 levels by 2020, a reduction of 25 % below current levels, and 80 percent below 1990 levels in 2050ⁱⁱⁱ. These actions, if implemented nationally, would meet the bill's goals of contributing to the stabilization atmospheric carbon concentrations at 450 parts per million (ppm) and limit warming to 2 degrees Celsius (3.6 degrees Fahrenheit)^{iv}.

Renewable Portfolio Standards. The bill requires the U.S. to derive 20% of its electricity from renewable sources by 2020. According to Energy Information Administration (EIA)^v, the technical potential of major renewable technologies could provide more than five times the electricity this country needs. The Union of Concerned Scientists (UCS) has estimated that wind areas, covering only 6 percent of the lower 48-state land area, could theoretically supply more than 1.3 times the current national demand for electricity and 12,000- square-mile area in Nevada could produce enough electricity from the sun to meet annual national demand^{vi}. There are also large untapped geothermal and bioenergy (energy crops and plant waste) resources - more than enough to supply 20 percent, of our nation's electricity needs.

Energy Efficiency Standards. Energy efficiency laws and regulations are now in operation in eight U.S. states: TX, NV, CT, CA, VT, CO and PA. The American Council for an Energy Efficient Economy (ACEEE) estimates that under an efficiency standard structured like that in the bill annual electricity use would be reduced by nearly 10% by 2020^{vii}. Such savings amount to about one-quarter of the currently projected national growth in electric sales over the 2007-2020 period - a savings of about 386 million megawatts, about 4.6% of the projected U.S. energy use for that year^{viii}. These savings are significantly greater than the projected savings from the combined efficiency provisions in the federal Energy Policy Act of 2005 and would be equivalent to avoiding 227 typical (300 megawatt) power plants.

Tailpipe Standards for Automobiles. The bill draws on California's effort to regulate tailpipe greenhouse gas emissions for light duty vehicles^{ix}. California's actions have so far have encouraged 10 states to follow suit: CT, ME, MA, NJ, NY, PA, RI, OR, VT and WA. These states account for about 5.7 million new vehicles or about a third of the new U.S. passenger car market. In California, by 2016, all new cars and light trucks will have to emit 30 percent less CO₂. The bill also contains medium and heavy duty vehicle tailpipe standards supported by research done by Oak Ridge National Laboratory^x.

New Powerplant Standards: The bill requires that new powerplants built after 2013, meet a standard in 2016 that limits greenhouse gas emissions to the level achieved by a combined cycle natural gas turbine, approximately a 60% reduction. This level of carbon capture can be met by use of proven technology available today, such as Integrated Gasification Combined Cycle, and carbon capture technologies already in commercial use in industries such as fertilizer production and petroleum refining. The ten years allowed before compliance with the standard would be required would allow for full demonstration of carbon sequestration technologies in geologic repositories^{xi}, ^{xii}.

Makes a Modest Investment in Innovative Technologies. The bill builds upon ongoing research efforts to spur development and deployment of innovative technologies.

Future Gen Power Plants. Under the bill, by 2015, 0.5 percent of electricity generation would need to be low-carbon, increasing each year until reaching 5 percent by 2020. The U.S. is already at work on a zero-emissions coal-fired power plant that produces hydrogen and electricity while using carbon capture and storage. The federally funded FutureGen plant is expected to be operating by 2013, producing 275 megawatts of electricity^{xiii}. A private British Petroleum plant that will produce an additional 500 megawatts is expected to be operating in California in 2011. Thus based on EIA projections for new coal plants, as early as 2012, almost half the low carbon generation needed to meet the requirement in 2015 would already be operational^{xiv}.

Cellulosic Renewable Fuels. The bill would require 5 billion gallons of ethanol produced from cellulose by 2015. An April 2005 study by the Department of Energy and Agriculture^{xv} indicates that the U.S. currently has a supply of biomass sufficient to displace 30% of the country's present petroleum consumption (at least 60 billion gallons per year, more than 10 times the bill's standard).

Citations

- 1 Carbon Dioxide Information Analysis Center, "Current Greenhouse Gas Concentrations," Oak Ridge National Laboratory, July 2006, <http://cdiac.ornl.gov/pns/reftools.html>.
- 2 Meinhausen, Malte, "What Does a 2° Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates," *Avoiding Dangerous Climate Change*, Schellnhuber, Hans Joachim, Ed., Cambridge University Press, 2006.
- 3 California Executive Order #S-3-05, Governor Schwarznegger, June 1, 2005, http://www.climatechange.ca.gov/climate_action_team/.
- 4 Ibid.
- 5 Energy Information Administration, "Impacts of a 10-Percent Renewable Portfolio Standard," February 2002, 20 Percent RPS, p. 29.
- 6 Clemmer, Steven, Nogee, Alan and Brower, Michael C. "A Powerful Opportunity: Making Renewable Electricity the Standard," Union of Concerned Scientists, November 1998.
- 7 Nadel, Steven, "Energy Efficiency Resource Standards: Experience and Recommendations" ACEEE Report EO63, March 2006, Executive Summary, p. iv.
- 8 Ibid.
- 9 California Code of Regulations Title 13, Article 2, Section 1960.1, Exhaust Emissions Standards and Test Procedures-1981 through 2006 Model Passenger Cars, Light-Duty and Medium-Duty Vehicles, <http://www.arb.ca.gov/regact/grnhsgas/revfro.pdf>.
- 10 Davis, Stacey C.; Truett, Lorena F., "Investigation of Class 2B Trucks (Vehicles of 8,500 to 10,000 lbs GVWR), Oak Ridge National Laboratory, March 2002.
- 11 Dooly, JJ, "Carbon Dioxide Capture and Geologic Storage," The Global Energy Technology Strategy Program, April 2006, http://www.pnl.gov/gtsp/docs/ccs_report.pdf, p. 8. This study (p. 52) says that the pre-operational phase for geological sequestration would take approximately a decade, thus making the 2016 date for enforcement of the power plant standards reasonable.
- 12 Intergovernmental Panel On Climate Change, "Carbon Dioxide Capture and Storage, Summary for Policymakers and Technical Summary," IPCC Special Report, September 2005, p. 22.
- 13 Dooly, JJ, "Carbon Dioxide Capture and Geologic Storage," The Global Energy Technology Strategy Program, April 2006, http://www.pnl.gov/gtsp/docs/ccs_report.pdf, p. 8. This study (p. 52) says that the pre-operational phase for geological sequestration would take approximately a decade, thus making the 2016 date for enforcement of the power plant standards reasonable.
- 14 Intergovernmental Panel On Climate Change, "Carbon Dioxide Capture and Storage, Summary for Policymakers and Technical Summary," IPCC Special Report, September 2005, p. 22.
- 15 U.S. Department of Energy and the U.S. Department of Agriculture, "Biomass as a Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply," April 2005. <http://feedstockreview.ornl.gov/>.